Climate Change

By Jim Jensen

Dairy Carbon Credits

An overview of trends and opportunities in the carbon credits market.

The potential to earn revenue from agricultural greenhouse gas (ghg) reductions, especially from anaerobic digestion projects, has generated much debate about this emerging ecosystem market. Historically in New York State dairy-based anaerobic digester operators that participated in carbon credit markets did so through the Chicago Climate Exchange (CCX), a pilot cap-and-trade market established in 2003. With the failure of the 111th Congress to complete passage of a national cap-and-trade program in the summer of 2010, the CCX closed shop. In the decade since those first payments, how have various efforts to "put a price on carbon and methane emissions" evolved? What is the potential today for livestock producers to benefit from carbon markets or carbon pricing? We look at current markets and summarize the opportunities.

1. What is the first step for a dairy farm anaerobic digester operator who is interested in participating in selling carbon credits?

Depends a bit on where they are in the life of their project. The best thing is to consider all these questions before the project is built. How the owner/operator wants to monetize the various environmental benefits of the project is best considered as part of the overall feasibility/investment analysis.

This is helpful for a few reasons. One key is to make sure that whatever market is chosen, the project will have the right systems in place to measure, monitor and verify the emission reductions. It also forces the owner/operator to arrange business relationships.

If the project is large enough to participate in the California carbon credit market, it is important that the project managers meet all the project requirements, including specific timelines for project registration and verification.

2. Do you need to work through an aggregator?

Again, it depends. Most buyers want to get larger volumes of credits for each transaction. That said, a project manager can choose to manage the various parts of the process alone or with the help of a consultant. That way they maintain ownership of the credits. But unless they can offer upwards of 50,000 credits at a time, they may find that they are working with a broker who can aggregate enough credits from multiple farm projects to make a sale.

Given that they may find it necessary to aggregate credits to make a sale, and that these markets are complex, with lots of rules and procedures that have to be followed to the letter, more often than not owner/operators find it worthwhile to work with a carbon market specialist throughout the whole process. Since rarely are carbon credits the major source of revenues for a project, it can be worthwhile to get a reduced piece of this pie, as long as the process is managed professionally.

3. What are the market options for NY-based anaerobic digester operators?

Voluntary – The voluntary market is inhabited by both non-profit and for-profit organizations that bring sellers and buyers together. The types and value of offsets are more varied, depending on the appetites and budgets of the buyers. This is typically the market for projects that are smaller, 1,500 to 2,000 cows.

Both The Carbon Trust and Native Energy use designated registries and protocols, such as the Carbon Action Registry (CAR) or Verified Carbon Standard (VCS), as the agency through which credits are registered, verified, and eventually retired on behalf of their customers.

The Climate Trust – Retires registered carbon offsets, mainly for projects based in Oregon, however, also manages projects in several states including Washington, Colorado, Montana and Massachusetts. The Trust also sources offsets for the Smart Energy program created by a Northwest gas provider, as an opportunity for customers to support production of "carbon-neutral" gas through farm-based biodigesters.

Native Energy – Has a diverse base of individual and business customers. They source carbon offsets for a wide range of large, environmentally-conscious businesses, such as ebay, Stonyfield Farm and Brita. Offset values vary widely depending on demand, supply, and the "value" of the project's story. In a few cases, offset values may loosely track the prices for compliance-grade carbon offsets with a discount for funding provided in advance of project implementation.

Compliance – The compliance market opportunity refers to

Table 1. Comparison of current U.S. cap-and-trade systems.

Regional GHG Initiative (RGGI)	**California Market (AB 32)**
Nine states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont	California now holds joint auctions with Québec, Canada
Covers electric generating plants >25MW Roughly 200 power plants	Covers power and industrial entities that generate more than 25,000 metric tons of CO2e annually. Expands in 2015 to include the transportation fuel sector.
Allowances based on U.S. short tons of CO2	Allowances based on metric tons of CO2
Allowances are auctioned. Minimum $2.00 price in 2014, rising 2.5% annually. Since 2008, RGGI auctions have yielded $1.5 billion in proceeds.	Allowances are auctioned, with a minimum auction reserve price, currently set at $12.10/MtCO2e.
Offsets are limited to 3.3% of a compliance obligation. They are allowed in five categories: landfill methane; sulfur hexafluoride (SF6) reduction from power transmission; afforestation projects per U.S. Forest Projects Offset Protocol; CO2 reductions from end-use energy efficiency; and ag manure management.	Offsets are allowed in five categories: livestock methane projects, U.S. forest projects, urban forest projects, ozone-depleting substances, and mine methane capture. Entities may use offsets for up to 8% of their compliance obligation.
Current auction prices: ~ $5.00 (up from $3.50 at the beginning of 2014)	Current auction prices: ~$12.50 to $13.00; offset values are estimated to lag allowance prices by about 25%.

cap-and-trade programs established by state governments to reduce GHG pollution. These are formal regulatory systems. The government establishes caps on GHGs for targeted sources and issues permits or allowances that are distributed, sold or auctioned to regulated entities for each ton of emissions they generate. Allowances are typically tradable instruments, so entities can easily manage their allowance needs and accounts. The goal of cap-and-trade systems is to use market-based mechanisms to achieve pollution reductions at the lowest possible cost and with the least disruption to the economy.

Two domestic cap-and-trade programs survived through the past decade and remain in operation today – the Regional Greenhouse Gas Initiative (RGGI), which involves nine Northeastern states, and the California carbon market, established by Assembly Bill 32 (AB 32) and administered by the California Air Resources Board (ARB). Each of these systems operates under its own sets of rules. Table 1 below highlights features of these two market approaches.

4. When planning for a digester project, should farmers include potential revenue from the sale of carbon credits in the overall economics of the system? Is this reliable?

Yes, with caution. Like with other products and revenue streams the more a project owner/operator can lock in the future revenue streams with offtake agreements, the better. Some voluntary actors, such as Native Energy or The Climate Trust, have been known to pay upfront for carbon credits. Of course an upfront payment will be heavily discounted for potential value and may require some form of insurance to cover potential risks. But for some projects this may be what they need to get the project built.

5. Hypothetical farmer question: I plan on co-digesting off-farm organic waste in my digester, so the more gas I produce, the more carbon credits I can get, right?

Nice try. However, the idea for carbon credits is different from other environmental attributes, such as renewable electricity credits (RECs) or renewable identification numbers (RINS) for renewable fuel. Those markets reward projects for producing clean energy resources.

The carbon offset markets are about rewarding projects for reducing GHG pollution. To do that, the project has to calculate how much pollution they are generating in the first place. That is referred to as the "baseline" level of GHGs – methane in this case. The baseline is typically calculated (rather than measured) through a formula that incorporates numbers of animal units, methods of manure collection and storage, climate, etc. The baseline sets the pollution level that can be reduced. You can't reduce this baseline pollution level lower than zero, no matter how much biogas you can produce.

Folks who are co-digesting outside substrates should be aware of the impact this might have on their project. The impact can be positive or negative. If the method of handling the co-digestion substrate also created GHG pollution that can be added to the project baseline, there may be an additional credit opportunity from digesting those substrates. ❐

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